UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/561,934	04/17/2006	Eduardo Ruiz	BCM-003US	3058

54004 7590 11/10/2008

MUIRHEAD AND SATURNELLI, LLC
200 FRIBERG PARKWAY
SUITE 1001
WESTBOROUGH, MA 01581

EXAMINER	
EWALD, MARIA VERONICA	
ART UNIT	**PAPER NUMBER**
1791	

MAIL DATE	DELIVERY MODE
11/10/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/561,934	RUIZ ET AL.	
	Examiner	Art Unit	
	MARIA VERONICA D. EWALD	1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12/5,3/6,4/6,8/6,9/6,10/6,3/7,7/8,8/8*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,4-42 and 45-75* is/are pending in the application.

4a) Of the above claim(s) *32 – 42,46 – 69 and 75* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,4-31,45 and 70-74* is/are rejected.

7)☒ Claim(s) *73-75* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *22 December 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *3/15/06 and 8/20/08*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

13. Claims 32 – 42, 46 – 69 and 75 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to nonelected inventions, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on July 11, 2008.

Claim Objections

14. Claims 73 – 75 are objected to because of the following informalities: As written, Applicant has not identified a claim 72. It appears that Applicant merely misnumbered the claims and as such, the Examiner is interpreting claims 73 – 75 as claims 72 – 74. Appropriate correction is required such that the claims are numbered appropriately or if Applicant intended a claim 72 to be included, such a claim is inserted and noted accordingly.

Claim Rejections - 35 USC § 112

15. Claim 17 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. As written, claim 17 is in means plus function form, thereby Applicant appears to be invoking 35 U.S.C. 112, 6th paragraph. Per MPEP 2181, a limitation is interpreted to meet the limitations of 35 U.S.C. 112, 6th paragraph if the

following three-prong test is met: 1) the language is in means plus function form, 2) the means is modified by a specific function and 3) such a function is not further limited by acts or structural components utilized to achieve the respective function. In this case, the Examiner interprets the “means for inducing vibrations to the controlling fluid..” as an invocation of 35 U.S.C. 112, 6th paragraph. However, such a limitation is objected to because the specification does not adequately disclose sufficient acts or components used to achieve such a function. Paragraph 0124 of the specification merely states that the apparatus can be modified or "provided with a means for achieving dynamic consolidation as in the VRTM variation of the RTM process for example, or by transmitting the mechanical vibration energy directly to the fluid.” Such a statement does not properly define the structural components used to provide the vibration and thus, claim 17 is rendered indefinite. Furthermore, MPEP 2181 also states that "if there is no disclosure of structure, material or acts for performing the recited function, the claim fails to satisfy the requirements of 35 U.S.C. 112, second paragraph. >“[A] bare statement that known techniques or methods can be used does not disclose structure” in the context of a means plus function limitation.” Biomedino, LLC v. Waters Technology Corp., 490 F.3d 946, 952, 83 USPQ2d 1118, 1123 (Fed. Cir. 2007) Thus, claim 17 must be appropriately corrected or clarified.

Claim Rejections - 35 USC § 102

16. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 4, 7, 12 – 15, 19 – 20, 26 – 28, 45, 70 and 71 are rejected under 35 U.S.C. 102(b) as being anticipated by Leoni, et al. (U.S. 5,152,949). Leoni, et al. teach a mold assembly for generating a composite part from a strengthener in a generally solid phase and a matrix in a generally liquid phase; said mold assembly comprising: a base mold including a strengthener chamber for receiving the strengthener (item 14 – figure 1), a matrix injection inlet for injecting the matrix in said strengthener chamber (item 26 – figure 1) and an evacuation outlet (item 28 – figure 1), said inlet and said outlet defining a propagation direction (column 5, lines 15 – 20 and 27 – 31); a cover mold including a compression chamber (item 38 – figure 1) and a fluid control aperture for injecting a controlling fluid in said compression chamber (item 24 – figure 1); said cover mold being so configured as to be sealingly mounted on said base mold whereby said strengthener chamber and said compression chamber are adjacent and said controlling fluid is an incompressible fluid (figure 1); and a deformable member provided in a gap defined by said strengthener chamber and said compression chamber (item 36 – figure 1), said deformable member being so configured as to pressurize the matrix toward the strengthener and propagate the matrix along said propagation direction upon compression exerted on said deformable member by the controlling fluid (figure 1; column 7, lines 55 – 68; column 10, lines 5 – 50); wherein said matrix injection inlet includes a diffusion passage provided on a contact wall of said strengthener chamber (figure 1); wherein said evacuation outlet is connectable to a vacuum source to

selectively generate at least a partial vacuum in said strengthener chamber (column 10, lines 5 – 10); and wherein said fluid control aperture is connectable to a fluid source to generate pressure in said compression chamber (column 9, lines 53 – 62).

With respect to claims 12 – 15 and 19 – 20, Leoni, et al. further teach that said gap has a variable thickness because of the pressure exerted on the bladder, such that the introduction of a vacuum between the bladder 36 and cauls 32 evacuates gas between the two layers, thereby the thickness of the gap will ultimately vary (figure1; column 9, lines 40 – 50); wherein said compression chamber has a first thickness, said strengthener chamber has a second thickness, said first and second thickness being variable upon deformation of said deformable member (column 9, lines 65 – 68; column 10, lines 15 – 25); wherein said membrane is impermeable to liquid (column 7, lines 45 – 68); wherein said strengthener chamber comprises a contact wall for locating the strengthener, said contact wall having a controlled surface finish (figure 1; column 5, lines 20 – 24); and wherein said base mold and said cover mold are rigid (figure 1; column 5, lines 13 – 15).

With respect to claims 26 – 28, 70 and 71, the reference also teaches that the said deformable member includes an elastic material being provided in at least a portion of said compression chamber and adjacent to said strengthener chamber (figure 1; column 5, lines 34 – 50); wherein said cover mold includes compartmentalized portions so configured as to independently move with respect to one another toward and away from said strengthener chamber for providing a gap of variable thickness (figure 1; column 10, lines 15 – 50); wherein said mold assembly further includes a tube provided

in said compression chamber and adjacent to said strengthener chamber, said tube being connected to a pressure source and deformable under pressure generated from the pressure source, said tube including at least one extremity mounted through said cover mold for controlling the pressure in said tube (item 24 – figure 1; column 9, lines 55 – 60); wherein said deformable member is able to be swollen in said compression chamber from the matrix permeating the strengthener to generate a deformation zone, said deformable member receiving pressure from the controlling fluid in proximity of said deformation zone for redirecting the matrix towards the strengthener (column 10, lines 15 – 25); wherein said deformation zone is adjacent to a matrix flow front corresponding to a portion of the strengthener impregnated by the matrix, said matrix flow front propagating in the strengthener along said propagation direction as the matrix in said deformation zone is redirected to the strengthener (figure 1).

With respect to claim 45, Leoni, et al. teach a mold assembly for generating a composite part from a strengthener and a matrix; said mold assembly comprising: a base mold including a strengthener chamber for receiving the strengthener (item 14 – figure 1) and a matrix injection inlet for injecting the matrix in said strengthener chamber (item 26 – figure 1) and an evacuation outlet (item 28 – figure 1), said inlet and said outlet defining a propagation direction; a cover mold including a compression chamber (item 38 – figure 1) and a fluid control aperture for injecting a controlling fluid in said compression chamber (item 24 – figure 1); said cover mold being so configured as to be sealingly mounted on said base mold whereby said strengthener chamber and said compression chamber are adjacent and said controlling fluid is an incompressible fluid

(figure 1); and a deformable membrane member provided in a gap defined by said strengthener chamber and said compression chamber (item 36 – figure 1), said deformable member generating a deformation zone in said compression chamber from a portion of the matrix permeating the strengthener, said deformable member being pressurized by the controlling fluid in proximity of said deformation zone for redirecting the portion of matrix generating said deformation zone back to the strengthener and for propagating the matrix along said propagation direction (column 10, lines 1 – 50).

Claims 1, 2, 4, 7 – 15, 18 – 19, 21 – 23, 25 – 28, 45 and 70 – 74 are rejected under 35 U.S.C. 102(b) as being anticipated by Cartwright (U.S. 6,506,325). Cartwright teaches a mold assembly for generating a composite part from a strengthener in a generally solid phase and a matrix in a generally liquid phase; said mold assembly comprising: a base mold including a strengthener chamber for receiving the strengthener (item 210 – figure 1), a matrix injection inlet for injecting the matrix in said strengthener chamber (item 220 – figure 1) and an evacuation outlet (item 216 – figure 1), said inlet and said outlet defining a propagation direction (figure 1); a cover mold including a compression chamber (area between items 214 and 215 – figure 1) and a fluid control aperture for injecting a controlling fluid in said compression chamber (item 232 – figure 1); said cover mold being so configured as to be sealingly mounted on said base mold whereby said strengthener chamber and said compression chamber are adjacent and said controlling fluid is an incompressible fluid (figure 1 column 4, lines 44 – 47) ; and a deformable member so provided in a gap defined by said strengthener

chamber and said compression chamber, said deformable member being so configured as to pressurize the matrix toward the strengthener and propagate the matrix along said propagation direction upon compression exerted on said deformable member by the controlling fluid (item 214 – figure 1; column 5, lines 30 – 35); wherein said matrix injection inlet includes a diffusion passage provided on a contact wall of said strengthener chamber (figure 1); wherein said evacuation outlet is connectable to a vacuum source to selectively generate at least a partial vacuum in said strengthener chamber (column 5, lines 33 – 38); wherein said fluid control aperture is connectable to a fluid source to generate pressure in said strengthener compression chamber (item 228 – figure 1); wherein said fluid control aperture extends in said cover mold and said matrix injection inlet extends in said base mold in a generally similar direction (figure 1); wherein said cover mold includes a vent extending from said compression chamber and through said cover mold (item 230 – figure 1; column 5, lines 38 – 43); wherein said vent is connected to a vacuum source to selectively generate at least a partial vacuum in said compression chamber (item 230 – figure 1; column 5, lines 38 – 43); wherein said vent comprises a valve to regulate the flow of the controlling fluid through said vent (figure 1; column 5, lines 38 – 43, 58 – 61); wherein said gap has a variable thickness (column 5, lines 53 – 55); wherein said compression chamber has a first thickness, said strengthener chamber has a second thickness, said first and second thickness being variable upon deformation of said deformable member (column 5, lines 53 – 57); wherein said deformable member includes a membrane sealingly mounted between

said strengthener chamber and said compression chamber (item 214 – figure 1); wherein said membrane is impermeable to liquid (column 5, lines 30 – 35).

With respect to claims 18 – 19, 21 – 23 and 25 – 28, Cartwright also teaches that the said mold assembly includes temperature controlling means (column 5, lines 25 – 27); wherein said strengthener chamber comprises a contact wall for locating the strengthener, said contact wall having a controlled surface finish (figure 1; column 3, lines 59 – 67); wherein said deformable member includes a deformable element (item 217 – figure 1) and a membrane (item 214 – figure 1), said membrane being sealingly mounted between said strengthener chamber and said compression chamber, said deformable element being provided in at least a portion of said compression chamber (figure 1; column 5, lines 45 – 50); wherein a surface of said deformable element is so machined as to be complementary to the shape of the composite part (figure 1); wherein said machined surface of said member includes a series of grooved channels so configured as to receive said membrane (item 217 – figure 1; column 5, lines 45 – 50); wherein said deformable element includes a generally porous and elastic material (column 5, lines 45 – 50); wherein said deformable member includes an elastic material being provided in at least a portion of said compression chamber and adjacent to said strengthener chamber (figure 1); wherein said cover mold includes compartmentalized portions so configured as to independently move with respect to one another toward and away from said strengthener chamber for providing a gap of variable thickness (column 5, lines 35 – 45).

With respect to claims 70 – 74, the reference also teaches that the said deformable member is able to be swollen in said compression chamber from the matrix permeating the strengthener to generate a deformation zone, said deformable member receiving pressure from the controlling fluid in proximity of said deformation zone for redirecting the matrix towards the strengthener (column 5, lines 35 – 45 and 50 – 60); wherein said deformation zone is adjacent to a matrix flow front corresponding to a portion of the strengthener impregnated by the matrix, said matrix flow front propagating in the strengthener along said propagation direction as the matrix in said deformation zone is redirected to the strengthener (figure 1; column 5, lines 50 – 60); wherein said mold assembly includes a porous medium provided in said compression chamber for controlling the propagation of the fluid injected in said compression chamber (item 217 – figure 1; column 5, lines 45 – 50); wherein said porous medium is made from a generally deformable element (column 5, lines 45 – 50).

With respect to claim 45, Cartwright teaches a mold assembly for generating a composite part from a strengthener and a matrix; said mold assembly comprising: a base mold including a strengthener chamber for receiving the strengthener (item 210 – figure 1) and a matrix injection inlet for injecting the matrix in said strengthener chamber (item 220 – figure 1) and an evacuation outlet (item 218 – figure 1), said inlet and said outlet defining a propagation direction (figure 1); a cover mold including a compression chamber (area between 214 and 215 – figure 1) and a fluid control aperture for injecting a controlling fluid in said compression chamber (item 232 – figure 1); said cover mold being so configured as to be sealingly mounted on said base mold whereby said

strengthener chamber and said compression chamber are adjacent and said controlling fluid is an incompressible fluid (figure 1; column 4, lines 45 – 48); and a deformable membrane member provided in a gap defined by said strengthener chamber and said compression chamber, said deformable member generating a deformation zone in said compression chamber from a portion of the matrix permeating the strengthener, said deformable member being pressurized by the controlling fluid in proximity of said deformation zone for redirecting the portion of matrix generating said deformation zone back to the strengthener and for propagating the matrix along said propagation direction (column 5, lines 50 – 60).

Cartwright teaches a molding apparatus, wherein a strengthener or reinforcing material is disposed in a base mold. The base mold is covered with a cover mold, comprised of a flexible bag material (item 215 – figure 1). The base mold includes a matrix injection inlet for injecting a resin into the strengthener. The cover mold includes a "pressurization chamber" which is controlled via a fluid controller to inject a pressurization fluid between a deformable member (item 214 – figure 1) and the cover. The fluid controls the amount of pressure exerted on the composite product, so as to control the amount of resin "infused" or impregnated into the strengthener. Because of the fluid control and the vacuum which is generated, the pressurization chamber and the space within it can be varied, depending on the characteristics desired of the composite part (column 6, lines 33 – 45).

The Examiner is also noting that Applicant has claimed "temperature controlling means" in claim 18. Based on the specification, the Examiner is not interpreting such claim language as an invocation of 35 U.S.C. 112, 6th paragraph because paragraph 0111 of the specification states that the temperature may be controlled by thermal resistors or any other known heating means. Thus, given its broadest reasonable interpretation, as long as a prior art reference includes any type of conventional heating means, such means anticipates the claim as written.

Claim Rejections - 35 USC § 103

17. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over either Leoni, et al. or Cartwright in view of Fritz, et al. (U.S. 6,257,866). Leoni, et al. and Cartwright teach the characteristics previously described but do not teach that the base mold includes a contact wall, peripheral walls and shoulders and wherein the cover mold includes a complementary contact wall, peripheral walls and shoulders, with a ridge and groove arrangement provided along the shoulders of the molds.

This however, is a conventional or known configuration of a mold assembly. For example, in a vacuum mold to form plastic sheets, Fritz, et al. teach a base mold with a contact wall, peripheral walls and shoulders with a pin or projection, which

complementary secures to a cover mold with a similar contact wall, peripheral walls and shoulder with a channel. The channel and projection are used to securely clamp the sheet.

Thus, it would have been obvious to one of ordinary skill in the art at the time of the Applicant's invention to configure the mold assembly of either Leoni, et al. or Cartwright such that it has walls and a ridge/groove pattern like that of Fritz, et al. since such an assembly is known for securing a sheet in a vacuum mold and since such a configuration is known in the art of vacuum molding.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Leoni, et al. or Cartwright in view of Fritz, et al. and further in view of Segen, Jr. (U.S. 6,250,909). Leoni, et al., Cartwright and Fritz, et al. teach the characteristics previously described but do not teach that the ridges and grooves are generally triangular in cross-section.

In a method to clamp a sheet in a thermoforming apparatus, Segen, Jr. teach clamping units with a generally triangular cross-section (figure 4a – 4c). The clamping units secure the sheet to the frame before and during thermoforming.

Thus, it would have been obvious to one of ordinary skill in the art at the time of the Applicant's invention to configure the apparatus of either Leoni, et al. or Cartwright with the mold configuration of Fritz, et al., further configured with the v-shaped ridges and grooves of Segen, Jr. for the purpose of securing the membrane before and during vacuum molding.

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Leoni, et al. or Cartwright in view of Palmer, et al. (U.S. 4,942,013). Leoni, et al. and Cartwright teach the characteristics previously described but do not teach that the membrane is permeable to gas.

In a vacuum molding apparatus, Palmer, et al. teach the use of multiple membranes or deformable members which contact a chamber wherein a strengthener is impregnated with resin. One of the deformable members is a breather cloth layer. The layer is permeable to gas and allows for an even distribution of pressure and compaction across and along the assembly (column 7, lines 50 – 56).

Thus, it would have been obvious to one of ordinary skill in the art at the time of the Applicant's invention to configure the apparatus of either Leoni, et al. or Cartwright with the breather layer of Palmer, et al. for the purpose of evenly distributing the pressure across the assembly, thereby ensuring even compaction as taught by Palmer, et al.

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Leoni, et al. or Cartwright in view of Christensen, et al. (U.S. 6,033,203). Leoni, et al. and Cartwright teach the characteristics previously described but do not teach that the mold assembly includes a means for inducing vibrations to the controlling fluid to expel residual gases entrapped in the strengthener.

In a apparatus to produce composite products, Christensen, et al. teach the use of a "shaker table" to induce vibrations in the resin, thereby ensuring complete

compaction of the composite product. Such a mechanism proves useful in resin transfer molding tools, allowing the resin to fully impregnate the reinforcing fibers, thereby achieving full saturation and the elimination of voids (column 3, lines 60 – 67; column 4, lines 45 – 51).

Thus, it would have been obvious to one of ordinary skill in the art at the time of the Applicant's invention to configure the apparatus of either Leoni, et al. or Cartwright with the shaker table of Christensen, et al. for the purpose of ensuring full saturation of the resin in the reinforcing fibers and eliminating voids in the composite product as taught by Christensen, et al.

Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cartwright in view of Gibson (U.S. 5,093,067).

Cartwright teach the characteristics previously described but do not teach that the deformable element is injected directly into the gap. However, the formation of a diaphragm or elastic member via injection molding is a known process.

For example, Gibson teaches the formation of a flexible diaphragm via the injection of resin material into a gap between two molds (figure 2c).

Thus, it would have been obvious to one of ordinary skill in the art at the time of the Applicant's invention to configure the apparatus of Cartwright such that the deformable element is injected directly into the gap for ease of production and because it is known to produce flexible diaphragms wherein a resin material is injected into a gap between an upper and lower mold, as taught by Gibson.

Claims 29 – 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Leoni, et al. or Cartwright in view of Seemann (U.S. 5,439,635). Leoni, et al. and Cartwright teach the characteristics previously described but do not teach that the cover mold includes a compression wall with a plurality of passages which are disposed longitudinally and transversally or wherein the diffusion passage is generally aligned with at least one transversal passage and said matrix injection inlet of said base mold is generally aligned with at least one longitudinal passage.

In an apparatus to produce a composite article comprised of reinforcing fibers impregnated with a resin, Seemann teaches that the cover mold or bag is configured with a series of grooves or elongated flow conduits. The flow conduits communicate for fluid flow with a resin distribution pattern (column 5, lines 62 – 68). Thus, any pressure exerted on the bag is evenly distributed along the pattern, thereby ensuring that the resin flows uniformly into the voids of the strengthener (column 3, lines 60 – 65). Because of even distribution of pressure, the strengthener is completely wetted and any bubbles or voids are eliminated (column 1, lines 40 – 50).

Thus, it would have been obvious to one of ordinary skill in the art at the time of the Applicant's invention to configure the apparatus of either Leoni, et al. or Cartwright with the cover mold of Seemann which includes a grooved surface for the purpose of mimicking the finished outer surface of the product, thereby ensuring that the resin is evenly distributed through the strengthener, eliminating voids and bubbles as taught by Seemann.

References of Interest

18. Herbert, Jr. (U.S. 5,087,193) is cited of interest to show the state of the art. Herbert, Jr. teaches a mold for forming a composite article, wherein a resin is impregnated into fibers which have been disposed in the mold. The mold is comprised of a female mold portion (which houses the fibers) and a flexible male mold. The injection of resin into the female mold portion deforms the male mold piece (item 26 – figure 8), such that it swells towards the top reference surface. To compact the resin and ensure uniform impregnation, a vacuum is turned on, which removes excess resin and forces the male mold piece into its original position (figure 8; column 6, lines 25 – 50).

Information Disclosure Statement

19. The prior art made of record, though not relied upon, is deemed pertinent to the state of the art.

Conclusion

20. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MARIA VERONICA D. EWALD whose telephone number is (571)272-8519. The examiner can normally be reached on M-F, 8 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dr. Yogendra Gupta can be reached on 571-272-1316. The fax phone

number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MVE

/Maria Veronica D Ewald/
Examiner, Art Unit 1791